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Phyllosticta ephedricola sp. nov. on *Ephedra intermedia*

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Abstract — The new anamorphic species *Phyllosticta ephedricola* on *Ephedra intermedia* in China is described, illustrated, and differentiated from *P. ephedrae*.

Key words — coelomycete, pathogen, taxonomy

Introduction

A species of *Phyllosticta* on necrotic stem spots of *Ephedra intermedia* was collected in 2011 from Hami, Xinjiang Province, China. Severe infections caused by this pathogenic fungus usually result in death of ground parts of the plants. Two characteristics, the shape of the conidiogenous cells and the cylindrical to clavate apically appendaged conidia, indicate that the fungus is a species of *Phyllosticta*. As no authentic *Phyllosticta* species has previously been described from *Ephedra* (Aa & Vanev 2002), we propose it as a new species.

Materials & methods

The fungal specimens were cut by hand using a razor blade to make thin sections of conidiomata for microscope observation. They were examined under a light microscope after they were mounted in water and lactophenol cotton blue on slides. Measurements for the new species were determined using the means of 50 spores and at least 20 pycnidia. The examined specimens were deposited in Lanzhou University Herbarium (LZU), Lanzhou, Gansu Province, China.

Taxonomy

Phyllosticta ephedricola L. Jin & Yan Wang, **sp. nov.** Plate 1

MycoBank MB 803189

Differs from all other *Phyllosticta* species by its ephedraceous host.

Type: China, Xinjiang Province, Hami city, on stems of *Ephedra intermedia* Schrenk & C.A. Mey. (*Ephedraceae*), 22 July 2011, L. Jin (**Holotype**, LZU 11001214).

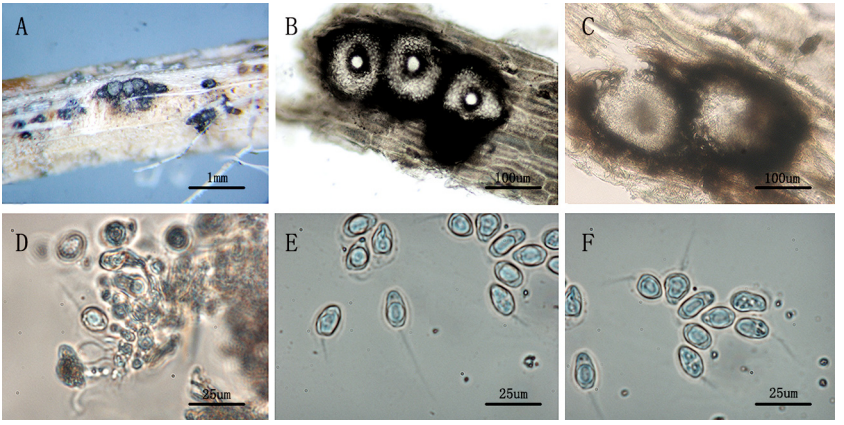

Plate 1. *Phyllosticta ephedricola* (holotype). A: Dark-brown stromata on stem of *Ephedra intermedia*. B: Ostioles. C: Section through a stroma showing an immersed eustromatic conidioma with inner surface covered by a layer of conidiogenous cells bearing conidia. D: Conidiogenous cell bearing an appendage-bearing conidium. E–F: Typical appendage-bearing guttulate conidia. Scale bars: A = 1 mm; B–C = 100 µm; D–F = 25 µm.

Etymology: Epithet refers to the host genus.

Occurring on stems. Mycelium immersed in the host tissue, septate, branched, hyaline to pale brown. Pycnidia immersed, or semi-immersed, separate or aggregated, globose to subglobose, 227.6 × 231.0 µm diam., brown to dark brown. Ostioles single, central, circular, 31.3 × 35.3 µm diam., with darker and thicker walls around the pore. Wall 20–32 µm diam., composed of 3–4 layers of small, rounded or irregular, pale brown to dark brown thick-walled cells and an inner textura prismatica with thin-walled paler cells. Conidiogenous cells hyaline, cylindrical, discrete, determinate, smooth, forming one apical conidium, 8.8 × 2.5 µm diam., originated from the internal layer of conidiomatal wall, sometimes hardly differentiated from the flat inner wall-cells. Conidia one-celled, ellipsoidal or obovoidal, seldom cylindrical, sometimes pyriform with a truncate base, broadly rounded apically and inconspicuously indented, 9.4–15.8 × 5.4–12.8 µm, surrounded by a slime layer, containing one large, bright guttule, 9.1–14.5 × 7.2–11.5 µm, almost fill the whole conidium. Apical appendage 12.5–34.4 × 1.9–3.3 µm, hyaline, single, subulate or filiform gelatinous, filiform, cellular, with subacute apex. The spermatial synanamorph and the *Guignardia* teleomorph have not been observed.

Discussion

The genus *Phyllosticta* Pers. (with type *P. convallariae* Pers.; Donk 1964) was introduced by Persoon in 1818. The modern generic circumscription is restricted to species with large unicellular guttulate conidia with a slime

layer and apical extracellular appendage and teleomorphs (where known) in *Guignardia* Viala & Ravaz (Aa 1973; Nag Raj 1993; Aa & Vanev 2002). Aa & Vanev (2002) accepted 141 species in *Phyllosticta* sensu stricto, while Kirk et al. (2008) estimated that there were only 92 species; recently another nine species have been described (Motohashi et al. 2008; Wikee et al. 2011).

Only one other *Phyllosticta* species has been described from *Ephedra*: *P. ephedrae* Trotter on *E. altissima* Desf. (Trotter 1916: 21). However, Aa & Vanev (2002: 200), who did not accept *P. ephedrae* as an authentic *Phyllosticta,* suggested that its small eguttulate conidia without appendages indicated that it was an *Asteromella* species (possibly the spermatial state of one of the five *Mycosphaerella* species described from *Ephedra*). Since *Ephedra* is a botanically isolated gymnospermous genus in a monogeneric family and order, we consider that the host specificity of *P. ephedricola* differentiates it from all other accepted *Phyllosticta* species.

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